Tri-Valley CAREs' supplemental comments on LLNL revised hazardous waste permit. Sent to DTSC w/ cover letter 1-31-22

1. **Comment: Human Health Risk Assessment and Ecological Risk Assessment**

Title 22 of the California Code of Regulations, § 66270.23(c), Specific Part 8 Information Requirements for Miscellaneous Units, requires "information on the potential pathways of exposure of humans or environmental receptors to waste constituents, hazardous constituents and reaction products, and on the potential magnitude and nature of such exposures."
The DWTF includes Miscellaneous Units that have the potential to impact the California Red-legged Frog, California Tiger Salamander, White-tailed Kites and other sensitive ecological receptors.
An ecological risk assessment is required by regulation to evaluate impacts to potentially affected ecological receptors.

DTSC's previous ecological risk assessment response found in the Response to Comment document, dated March 9, 2016:

"Section 66270.23(c) does not require an ecological risk assessment. Rather section 66270.23(c) requires LLNL to supply additional information in regard to the operation of miscellaneous units as part of the permit application. DTSC concluded that the information provided in the HRA covers the potential pathways of exposure of humans and environmental receptors to waste constituents, hazardous constituents and reaction products, and on the potential magnitude and nature of such exposures. The information can be found in Volume 1 Section 5 and 19, and Volume 2 Section 5.5 of the operations plan as well as in the HRA."

Analysis of DTSC's Response to Comment:

The DTSC response states the information has been provided in Volume 1 and 2 as well as the 2010 HRA. **There is no information in Volumes 1 and 2 or the HRA that addresses impacts to ecological receptors. The DTSC response was and is still incorrect. Moreover, it does not meet the regulatory requirement to evaluate impacts to environmental receptors. The DTSC response completely fails to address the comment.**

The 2010 HRA and 2019 Supplemental Analysis evaluate impacts to **human receptors.** It is scientifically incorrect to apply human health risk standards to ecological receptors. This is based on the commonly known and accepted fact that ecological receptors respond to chemicals differently and sometimes much more adversely than the humans when exposed to the same chemical at the same dose.

Evaluation of the 2010 Health Risk Assessment, Attachment 2 – Requirements for Miscellaneous Treatment Units, section 1.5, Maps and Potential Pathways. On pages 1-27 and 28, the following information appears:

"All treatment activities conducted in RHWM miscellaneous treatment units are conducted indoors in a facility with chemically impervious flooring and controlled ventilation. Airborne emissions from areas where organic and reactive wastes are treated are further subject to treatment in the Process Off-Gas System (POGS). Here, the hazardous and radioactive particulate constituents are removed prior to a second HEPA filtration stage followed by discharge to the atmosphere.

Waste treatment technicians perform treatment activities while wearing personal protective equipment (PPE) specified by trained experts in the LLNL Hazards Control Department. Potential exposure pathway control is addressed by engineering, administrative and PPE controls. **Environmental exposures to land, air, water, livestock and real property are insignificant due to the nature of the Miscellaneous Units operated by LLNL. Exposure to the public is negligible.**

Potential exposure pathways are addressed in greater detail in the LLNL Health Risk Assessment (A.T. Kearney, Inc. & The Earth Technology Corporation, 1989), and in Volume 1, Sections 5 and 19 of the current RCRA Part B permit application."

Evaluation of the two sentences in bold font above:

LLNL does not provide any documentation to support the two sentences in bold font relative to ecological receptor risk analysis. Furthermore, the 1989 A.T. Kearney document was a RCRA Facility Assessment. It was not a health risk assessment. All references to the RCRA Facility Assessment as a health risk assessment should be deleted. LLNL completely fails to address the requirement to conduct an ecological risk assessment. Moreover, completely false and misleading statements tear down any trust the public has (had) in LLNL.

Summary:
An ecological risk assessment must be prepared that meets agency-accepted processes available on the DTSC Human and Ecological Risk Office webpage such as the Preliminary Endangerment Assessment Guidance Manual, Guidance for Ecological Risk Assessments and other risk assessment tools and guidance available on the US EPA Risk Assessment webpage.

Based on new AERMOD air dispersion and modeling information provided in the 2019 Supplemental Analysis, isopleth Figures 2 and 3 indicate ground concentrations of chemicals from the DWTF stack at several on-site and off-site locations. All locations such as the Arroyo Seco Elementary School at 5280 Irene Street (Figures 2 and 3, location # LLNL-9_9) and all other off-site locations as well as all on-site locations identified on Figures 2 and 3 identify ground concentrations that must be evaluated to determine potential ecological receptor impacts.

2. **Comment on the 2019 Supplemental Analysis, Figures 2 and 3:**

   The ground-concentration scale should indicate an upper limit. A lower concentration is provided but not an upper limit.

   The figures should identify easily identified landmarks such as major streets (e.g., Vasco Rd, Patterson Pass Rd, Greenville Rd, East Ave, I-580, and Arroyo Seco Elementary School). It is extremely difficult to see LLNL and surrounding areas in the figures given the fuzzy resolution. LLNL should strive to provide clear and reader-friendly information to the public.

3. **Comment on the 2019 Supplemental Analysis, Section 4.8, Key Assumptions and Section 4.9, Uncertainty Analysis.**

   Sections 4.8 and 4.9 rely upon accepted engineering standards and practices, for the most part. However, there is absolutely no justification for the statement in Section 4.8. Uncertainty Analysis: "...and the very conservative estimated 95% removal efficiency guarantees that the emissions efficiency estimated are worst case." What is the basis for 95% removal efficiency? The only scientific and operational method to back up this claim is to conduct a Source Test in accordance with US EPA, CARB and BAAQMD Source Testing standards. If the 95% removal efficiency is grossly underestimated, then ground-concentrations of waste constituents will increase. This will change the human cancer and non-cancer calculations as well as impacts to ecological receptors. Using assumptions to estimate emissions must be backed up by real data obtained from source testing.

   The parents of students, Livermore Unified School District management and all potentially exposed persons at Arroyo Seco Elementary School should be contacted in person to explain, in layman's terms, conclusions of the human health and ecological risk assessments.

4. Comment on Attachment 4, Closure Plan, Appendix A, Closure Plan for the Nine Units in Area 612:

The 1992 Environmental Impact Statement, page 143 of 549, included the following description of Area 612:

"Building 612 and a portion of the surrounding yard (Figure 4.17-1) were constructed by LLNL in 1966. This area serves as a hazardous, radioactive, and mixed waste storage facility. Before its construction, the Building 612 Area was apparently little used, except for U.S. Navy–built ammunition bunkers in the northern portion of the current storage yard. No surface storage or disposal areas are known to have been associated with the bunkers during the Navy era. In 1978, the facility was expanded to the north to include the area formerly occupied by the Navy bunkers.
The Building 612 Area has been identified as a possible area of release of hazardous materials. Potential sources of contamination include a waste evaporation area (Dreicer, 1985), shipping and receiving areas, a waste processing area, a yard storage area, polychlorinated biphenyls and transuranic material storage, hazardous waste drum storage, mixed waste storage, an incinerator and incinerator waste storage areas, a historical spill area, and an area that handled miscellaneous transport equipment (Thorpe et al., 1990). Vadose zone sediments near Building 612 are characterized by three areas of soil vapor volatile organic compound concentrations between 10 and 100 ppm located in the northern, central, and southern portions of the study area. The dominant constituents are perchloroethylene and trichloroethylene (Table 4.17-5), with the highest value occurring 11 ft below the surface and generally low concentrations in the upper 25 ft. Traces of Freon-113 were also found. No evidence exists suggesting a release of fuels and aromatic hydrocarbons, metals, or polychlorinated biphenyls. This area will undergo more extensive sampling as part of RCRA activities to close the incinerator. "

The "Final Environmental Impact Statement and Final Impact Report for Continued Operation of Lawrence Livermore National Laboratory and Sandia National Laboratories, Livermore," Volume V of V, Attachments, August 1992," page 380/669 states:

"7. There is also some question whether drums of " dry " waste necessarily remain dry.
A 1983 LLNL Incident Analysis Report on a radiation spill in the 612 yard indicated that certain waste drums then used lose their seal with "handling and thermal cycling." The same report stated that "the thermal cycling in humid air conditions causes progressive condensation of water inside the drum." LLNL Incident Analysis Report, "Radioactive Waste Spill at Building 612 Compound,"

April 5, 1983, Exhibit J, p. 1. In that incident a drum containing milligram quantities of Plutonium, Curium, and Americium was mislabeled as containing low specific activity (LSA) waste and was stored outdoors for several years. Liquid from inside the drum apparently spilled out when the drum, along with others, was tilted to drain rainwater off the lid. A portion of the 612 yard was contaminated; some radioactive material also was tracked offsite into homes and autos by employees."

The sample areas only include areas inside waste storage areas. The area was used as an Interim Status waste management area which included Waste Staging Areas (outside of Container Storage Units). There have been numerous Reportable and Non-reportable spills as documented in reports to DTSC and the Water Board.

Please provide the status of Area 612 "Areas of Concern" and "Solid Waste Management Units" identified in the "A.T. Kearney, Inc. & The Earth Technology Corporation. *RCRA Facility Risk Assessment.* EPA Region IX, 1989."

The RCRA Facility Assessment (RFA) process was established by EPA to identify areas of potential contamination and solid waste units in the mid-late 1980's. It was not intended to include sampling or clean up information. The sampling and cleanup process was to follow the initial RFA process. Did LLNL, EPA or DTSC ever follow up on all the AOCs and SMUs identified in the RFA? If not, please provide cleanup information regarding Area 612 in the Area 612 closure plan.

The Closure Plan does not include a discussion section on spills anywhere inside the fenced (permitted, former Interim Status) area, including Waste Staging Areas. The Closure Plan also fails to include sampling for documented spill areas inside the fence line.

All of this spill information was obtained by reviewing public records and/or conducting a search on the internet. The Area 612 Closure Plan must be revised to address the spills above as well as other spills not reported to any agency.

5. Comment: Area 612 Closure plan, Interim Status Incinerator partial closure

Building 624 Mixed Waste Incinerator, partial closure. There is no discussion of the Incinerator in the Area 612 Closure Plan. LLNL committed to close the unit; however, the closure plan does not include any information regarding this unit. Please include the partial closure plan and independent engineering certification of closure activities. Please include the sampling plan for the unit. Given that fact that the unit incinerated Mixed Waste liquids, the closure plan must sample for all waste constituents that would be transported downwind of the unit and any

spills at the unit. Contaminants deposited downwind would have been further transported by wind and water. Please provide the closure plan sampling plan and results that would have evaluated the presence of radioactive and hazardous constituents around and in the vicinity of the unit. The incinerator is visible in the diagram below.

6. **Comment: Area 612 Closure Plan, Area 612-5 partial closure**

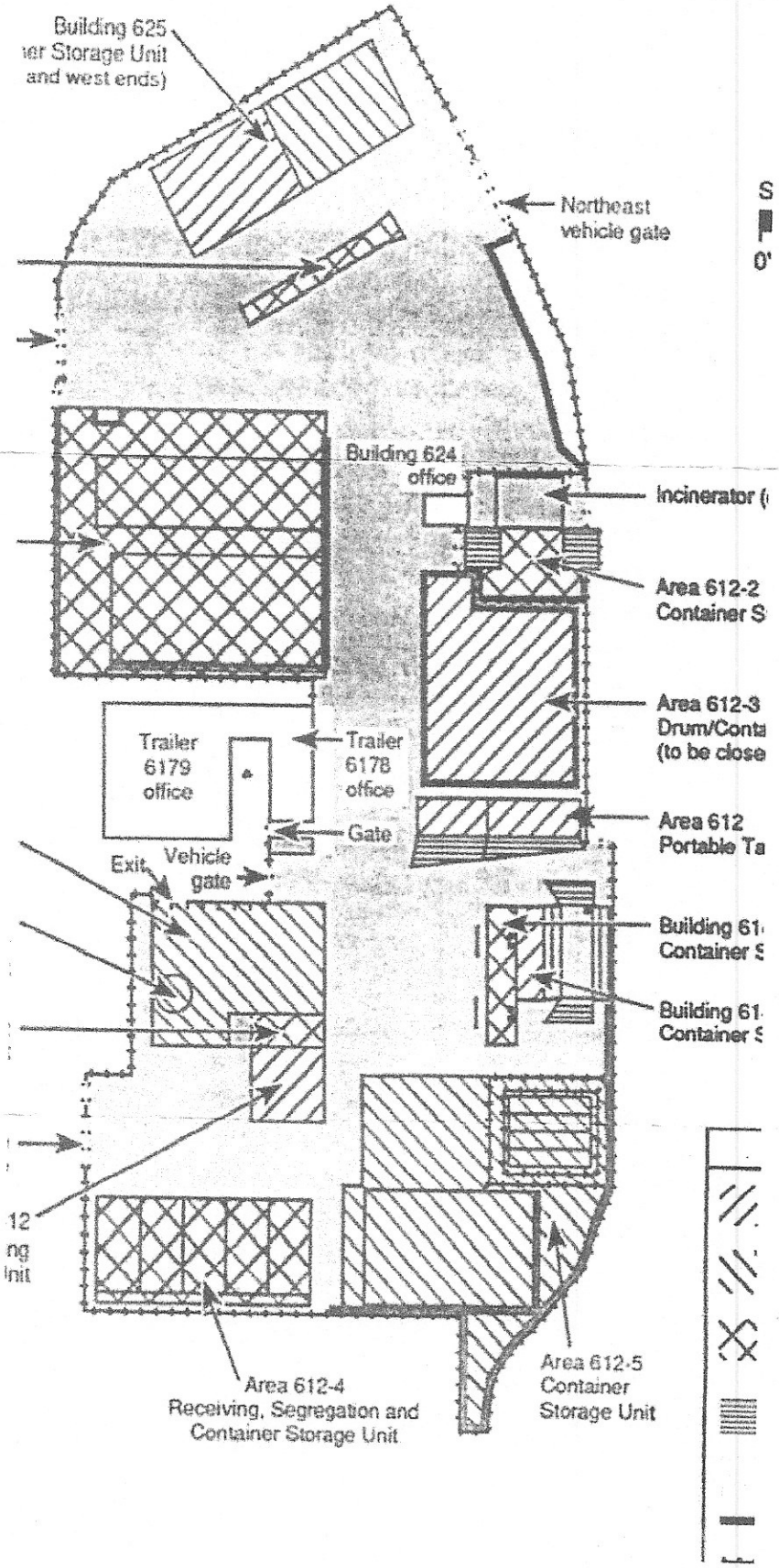
   Area 612-5, Four Containers were used for regulated Classified Waste Storage. Please include a discussion of the Area 612-5 Containers that were apparently closed including the sampling plan, analytical results and independent engineer's certification. The four 612-5 container storage units are visible in the diagram below.

7. **Comment on the Closure Schedule, Table A15-2, Closure Schedule:**

   The schedule does not include a fixed approval timeframe for DTSC approval. Given DTSC's staffing and workload, the time for DTSC to issue the closure certification concurrence letter could take months, which could extend the total time out indefinitely, based on DTSC's past performances. Past historical performance is the best indicator of future performance. Please include details such as:

   A. Will LLNL submit a notice to commence with closure? Or will Month 1, Day 1 be the effective date of the HWFP?
   B. Include a fixed time for DTSC to provide concurrence.
   C. Will Phase Two, Month 1, Day 1 start when DTSC provides closure concurrence to LLNL?

   Please fill in the details to ensure this does not evolve into an unauthorized "Delayed Closure."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